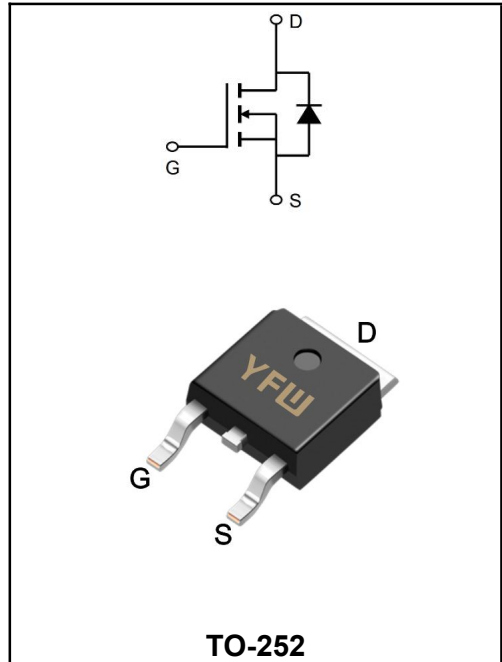


100V N-CHANNEL ENHANCEMENT MODE MOSFET

MAIN CHARACTERISTICS

I_D	20A
V_{DSS}	100V
R_{DS(on)-typ(@V_{GS}=10V)}	< 85mΩ(Type:65 mΩ)



Application

- ◆Lithium battery protection
- ◆Wireless impact
- ◆Mobile phone fast charging

Maximum Ratings at T_c=25°C unless otherwise specified

Characteristics	Symbols	Value	Units
Drain-Source Voltage	V_{DS}	100	V
Gate - Source Voltage	V_{GS}	±20	V
Drain Current, V _{GS} @ 10V @T _C =25°C	I_D	20	A
Drain Current, V _{GS} @ 10V @T _C =100°C	I_D	13	A
Pulsed Drain Current ¹	I_{DM}	57.9	A
Total Power Dissipation @T _C =25°C	P_D	30	W
Total Power Dissipation ³ @T _A =25°C	P_D	2.7	W
Single Pulse Avalanche Energy ⁴	E_{AS}	7	mJ
Storage Temperature Range	T_{STG}	-55 to +150	°C
Operating Junction Temperature Range	T_J	-55 to +150	°C
Maximum Thermal Resistance, Junction ambient	R_{θJA}	55	°C/W
Maximum Thermal Resistance, Junction-case	R_{θJC}	5.1	°C/W

Maximum Ratings at Tc=25°C unless otherwise specified

Characteristics	Test Condition	Symbols	Min	Typ	Max	Units
Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=250\mu A$	V(BR)DSS	100	107	-	V
Zero Gate Voltage Drain Current	$V_{DS}=100V, V_{GS}=0V$	I_{DSS}	-	-	1.0	μA
Gate to Body Leakage Current	$V_{GS}=\pm 20V, V_{DS}=0V$	I_{GSS}	-	-	±100	nA
Gate Threshold Voltage	$V_{DS}=V_{GS}, I_D=250\mu A$	V_{GS(th)}	1.2	1.85	2.5	V
Static Drain-Source on-Resistance note3	$V_{GS}=10V, I_D=5A$	R_{DS(on)}	-	65	85	mΩ
	$V_{GS}=4.5V, I_D=3A$		-	75	100	
Forward Transconductance	$V_{DS}=5V, I_D=5A$	g_{FS}	-	14	-	S
Gate Resistance	$V_{DS}=0V, V_{GS}=0V, f=1MHz$	R_g	-	3	-	Ω
Input Capacitance	$V_{DS}=15V$ $V_{GS}=0V$ $f=1.0MHz$	C_{iss}	-	1100	-	pF
Output Capacitance		C_{oss}	-	55	-	
Reverse Transfer Capacitance		C_{rss}	-	40	-	
Total Gate Charge	$V_{DS}=50V$ $V_{GS}=10V$ $I_D=5A$	Q_g	-	11.9	-	nC
Gate-Source Charge		Q_{gs}	-	2.8	-	
Gate-Drain("Miller") Charge		Q_{gd}	-	1.7	-	
Turn-on delay time	$V_{DS}=30V$ $I_D=5A$ $R_G=1.8\Omega$ $V_{GS}=10V$	t_{d(on)}	-	3.8	-	ns
Turn-on Rise Time		T_r	-	25.8	-	
Turn-Off Delay Time		t_{d(OFF)}	-	16	-	
Turn-Off Fall Time		t_f	-	8.8	-	
Continuous Source Current1,5	$V_G=V_D=0V, \text{ Force Current}$	I_S	-	-	14.6	A
Pulsed Source Current2,5		I_{SM}	-	-	25	A
Diode Forward Voltage 2	$V_{GS}=0V, I_S=10A$	V_{SD}	-	-	1.2	V

Notes:

- 1、 The data tested by surface mounted on a 1 inch 2 FR-4 board with 2OZ copper.
- 2、 The data tested by pulsed , pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$
- 3、 The EAS data shows Max. rating . The test condition is $V_{DD}=80V, V_{GS}=10V, L=0.1mH, I_{AS}=7A$
- 4、 The power dissipation is limited by 150°C junction temperature
- 5、 The data is theoretically the same as I D and I DM , in real applications , should be limited by total power dissipation

Ratings and Characteristic Curves

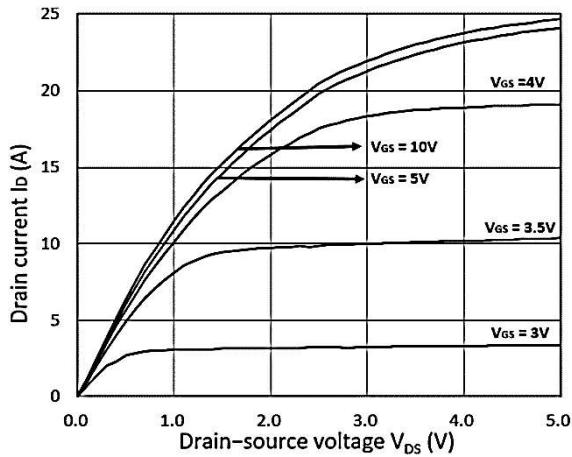


Figure 1. Output Characteristics

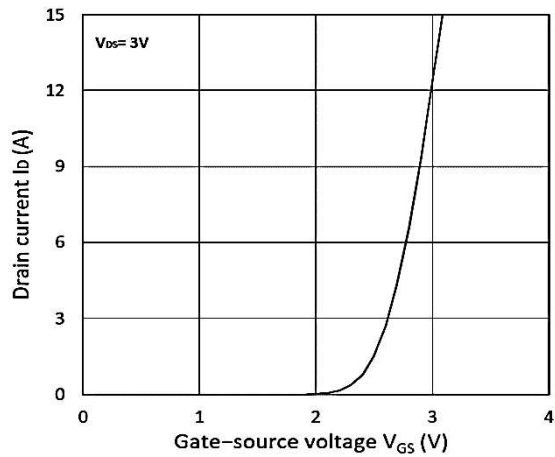


Figure 2. Transfer Characteristics

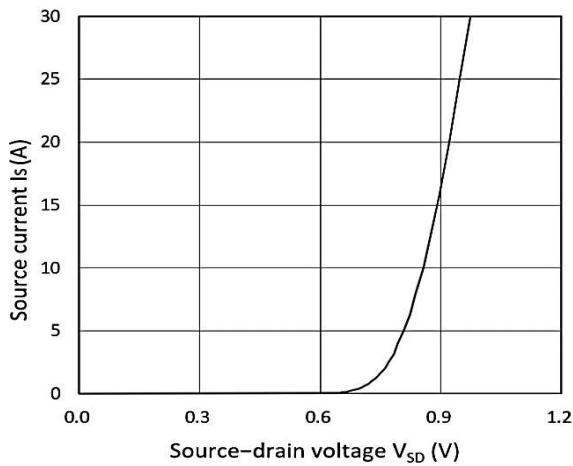


Figure 3. Forward Characteristics of Reverse

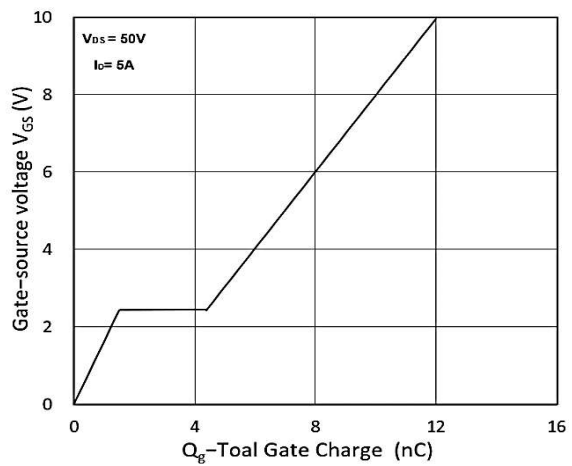


Figure 4. Gate Charge Characteristics

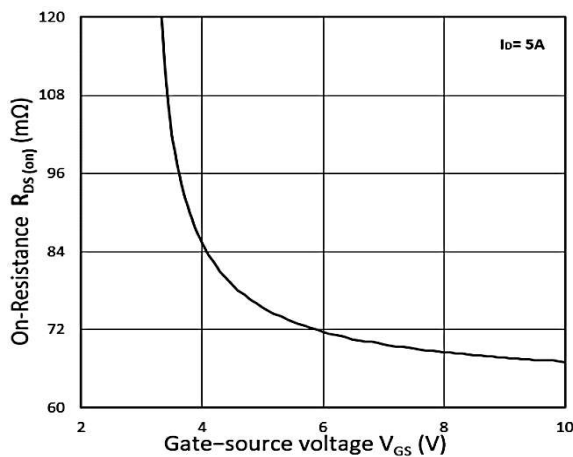


Figure 5. $R_{DS(on)}$ vs. V_{GS}

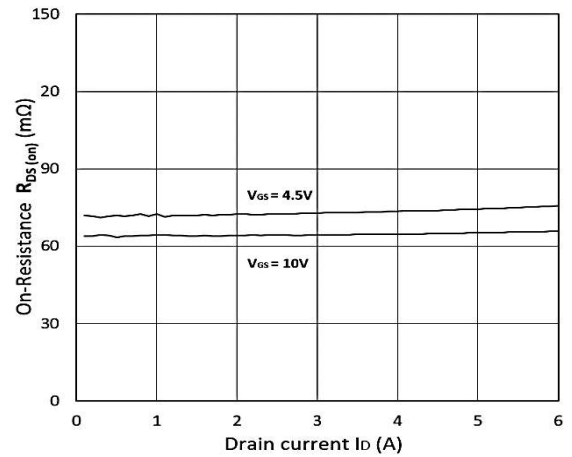


Figure 6. $R_{DS(on)}$ vs. I_D

Ratings and Characteristic Curves

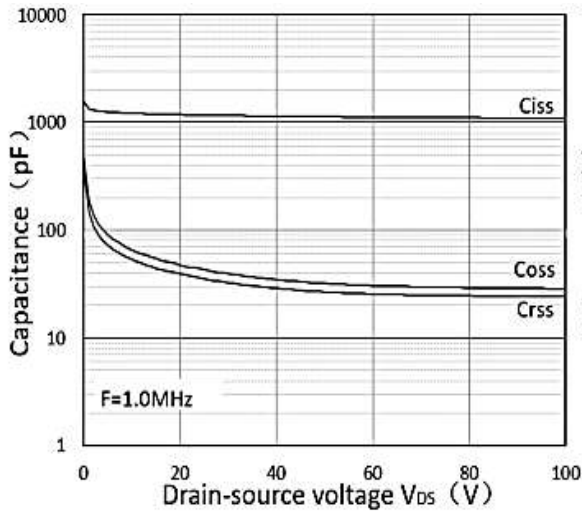


Figure 7. Capacitance Characteristics

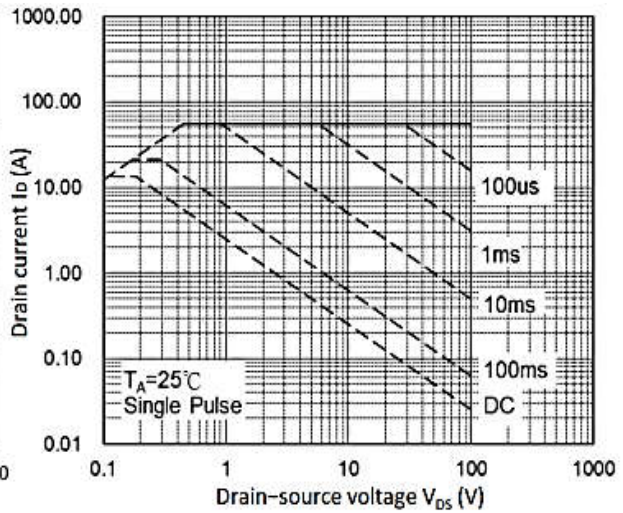


Figure 8. Safe Operating Area

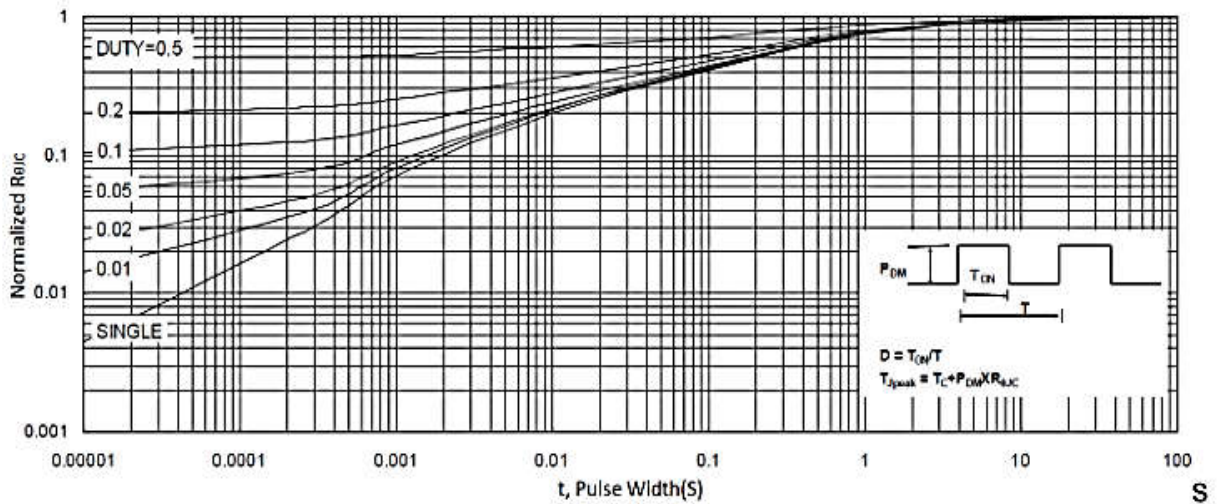


Figure 9. Normalized Maximum Transient Thermal Impedance

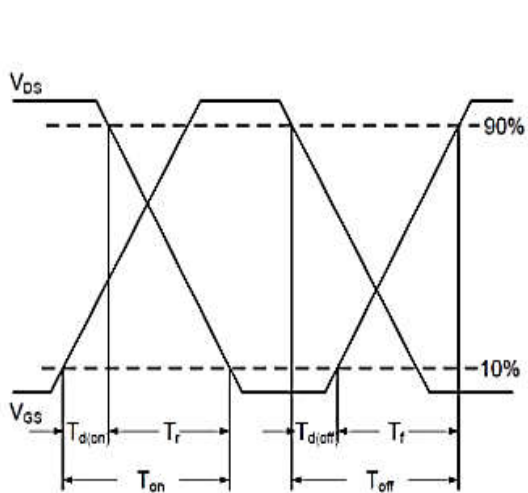


Figure 10. Switching Time Waveform

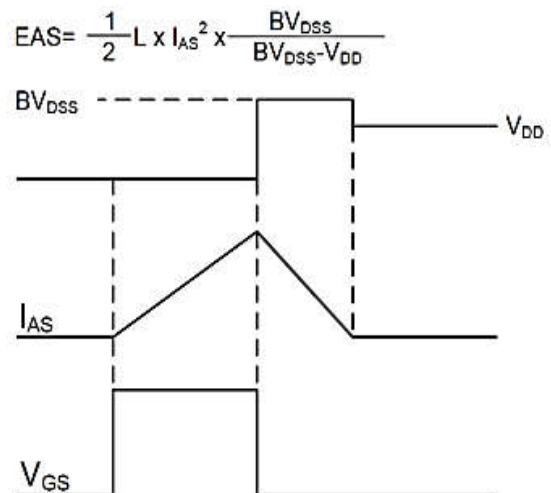
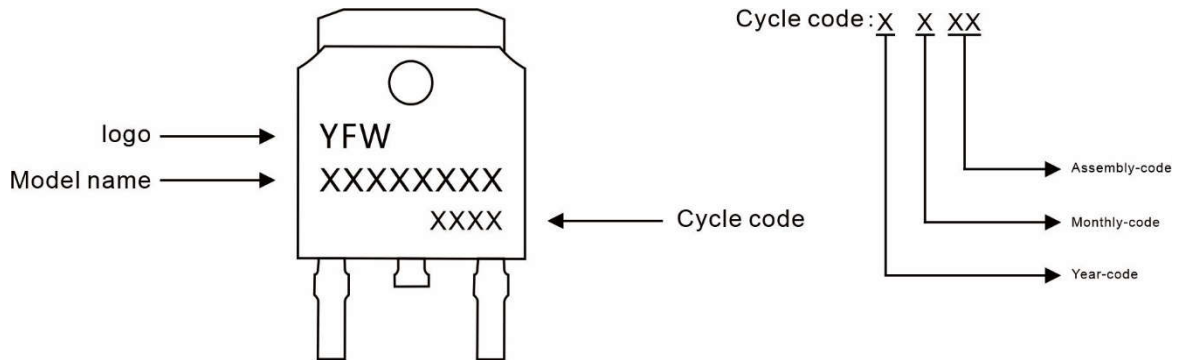


Figure 11. Unclamped Inductive Switching Waveform

Marking Diagram



Ordering information

Model name	Package	Unit Weight	Base Quantity	Packing Quantity
YFW20N10AD	TO-252	0.011oz(0.32g)	2500pcs/reel	5000pcs/box 25000pcs/Carton

Package Dimensions

TO-252

Dim	Millimeter		Inches	
	Min.	Max.	Min.	Max.
A	2.20	2.50	0.087	0.098
A1	0.00	0.12	0.000	0.005
A2	2.20	2.40	0.087	0.094
B	1.20	1.60	0.047	0.063
b	0.50	0.70	0.020	0.028
b1	0.70	0.90	0.028	0.035
c	0.40	0.60	0.016	0.024
c1	0.40	0.60	0.016	0.024
D	6.35	6.65	0.250	0.262
D1	5.20	5.40	0.205	0.213
E	5.40	5.70	0.213	0.224
e	2.20	2.40	0.087	0.094
e1	4.40	4.80	0.173	0.189
L	10.00	11.00	0.393	0.433
L1	2.70	3.10	0.106	0.122
L2	1.40	1.80	0.055	0.071
L3	0.90	1.50	0.035	0.059

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